

Docket No.: PFLUG
Appl.No.: 09/754,618

REMARKS

The last Office Action of May 27, 2005 has been carefully considered. Reconsideration of the instant application in view of the foregoing amendments and the following remarks is respectfully requested.

Claims 1-11 are pending in the application. New claims 12 and 13 have been added. No claims were cancelled.

Claims 1-11 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Pat. No.5,921,684 (hereinafter "Niina") in view of Technical Book, Ball and Roller Bearings, Publisher John Wiley & Sons, Third Edition, pp 38-41 (hereinafter: "Technical Book").

REJECTION OF CLAIMS 1-11 UNDER 35 U.S.C. §103(a) AS BEING UNPATENTABLE OVER NIINA IN VIEW OF TECHNICAL BOOK

The rejection under 35 U.S.C. 103(a) is respectfully traversed.

The Examiner based the §103(a) rejection on a combination of Niina with Technical Book.

Applicant has added two new claims to claim both the disks and the scroll compressor having a hardness of at least 700 HV. Neither reference whether combined or not provides any hint that the through-hardened martensitic structure can have such hardness.

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The question here is whether there is a motivation to make the combination as alleged by the Examiner and if so would that produce the invention? The answer has to be no for the following reasons.

Niina describes a scroll compressor having bearing disks and bearing balls for rolling along a track. As admitted by the Examiner, Niina fails to disclose bearing disks made of through-hardened ferrous material. Niina is solely concerned with the surface of the ball bearings.

The formula Niina teaches abbreviates essentially to a safety factor of 7 as discussed explicitly in the Niina reference. This safety factor 7 defines the maximal admissible shearing stress that may apply at the level of $1/7$ of the hardness at a particular depth of the raceway in the disk and not exceeding the hardness at that depth. In summary Niina teaches surface layer hardening by suggesting carburizing the steel as the only solution to diminish the stress on the raceways.

Technical Book only addresses the effect of certain temperatures on certain steels, yet expressly states on page 39 that the curves as shown on page 40 thereof (1.65 and 1.66) are not usable in their entirety since the full parameters were not taken into account [for attaining a desired hardness]. Furthermore, Technical book does not mention roller bearings for scroll compressors; it only mentions tapered and cylindrical roller bearings.

Applicant's Fig. 3 explicitly shows that the hardness attained for a scroll compressor is at least 700 as measured in HV, which translates to a safety factor of 1 as compared to 7, which is attained by the steels as claimed by applicant being through-hardened to a hardness of 700 HV by means of a martensite

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structure throughout. Such a through-hardened steel is not taught by Technical Book. Technical Book only refers to "changing the hardening and tempering temperatures [whereby] various material properties are obtained as shown in Figs. 1.65 and 1.66." Examples given do not include the hardness as achieved by steels with martensite structure throughout.

Niina does not disclose nor teach any of the steels that are claimed here. Accordingly, a through-hardened martensitic structure cannot be achieved in Niina, however it is treated.

Therefore it is applicant's contention that the combination of Niina and Technical Book does not constitute a combination which a person skilled in the art would consider when attempting to solve the problems addressed by the present invention.

Thus, there must be some motivation to combine the references to create the case of obviousness, and a showing that a skilled artisan, confronted with the problems as the inventor, would select the elements from the cited prior art references.

It is applicant's contention that the motivation here is entirely missing. The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. In re Gordon, 733 F.2d at 902. This, however, is not the case here. It is applicant's contention that the Examiner relied upon hindsight to arrive at the determination of obviousness, by piecing together the

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teachings of the prior art so that the claimed invention is rendered obvious. In re Gorman, 933 F.2d 982.

For the reasons set forth above, it is applicant's contention that neither Niina nor Technical Book, nor a combination thereof teaches or suggests the features of the present invention, as recited in claim 1, which is directed to a particular type of thrust ball bearing, and claim 7, which is directed expressly to a scroll compressor having incorporated therein this particular type of axial bearing.

As for the rejection of the retained dependent claims, these claims depend on claims 1 and 7, respectively, share their presumably allowable features, and therefore it is respectfully submitted that these claims should also be allowed.

Withdrawal of the rejection of claims 1-13 under 35 U.S.C. §103(a) and allowance thereof are thus respectfully requested.

CONCLUSION

Applicant believes that when the Examiner reconsiders the claims in the light of the above comments, he will agree that the invention is in no way properly met or anticipated or even suggested by any of the references however they are considered.

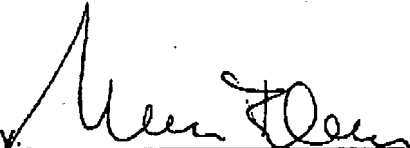
In view of the above presented remarks and amendments, it is respectfully submitted that all claims on file should be considered patentably differentiated over the art and should be allowed.

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Reconsideration and allowance of the present application are respectfully requested.

Should the Examiner consider necessary or desirable any formal changes anywhere in the specification, claims and/or drawing, then it is respectfully requested that such changes be made by Examiner's Amendment, if the Examiner feels this would facilitate passage of the case to issuance. If the Examiner feels that it might be helpful in advancing this case by calling the undersigned, applicant would greatly appreciate such a telephone interview.

Respectfully submitted,

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